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ABSTRACT

A cognitive process approach is applied to this discussion of the nature and relationship of skills, thinking, and social studies knowledge. To make understanding explicit, the paper addresses: (1) the meaning of cognitive skills and their role in thinking; (2) generic versus specific skills; and (3) implications for the National Assessment of Educational Progress (NAEP). Critical thinking is a skill frequently associated with social studies learning. However, attempts to detail a task analysis of critical thinking skill have met with problems: It is difficult to define a constant concept of thinking; thinking is rarely a process of linear steps; thinking about one question tends to raise others; and thinking cannot be divided into pieces and reconstructed. Skills and thinking are not synonymous and should not be treated as such for assessment. Despite the assumption that thinking skills are generic and transferable from one subject to another, there is evidence that the development of thinking skills is highly knowledge dependent; the separation of subject matter content and thinking process is arbitrary and misleading. Social studies test items should assess either the application of a skill, or the selection and application of the appropriate skill. To assess critical thinking, assessment of thinking and not assessment of separate skills is needed. Test items should include social studies subject matter, and former NAEP items should be retained for comparative analysis. (GDC)

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Assessing Skills and Thinking in Social Studies

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ASSESSING SKILLS AND THINKING IN SOCIAL STUDIES

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August, 1986

Meaningful assessment of social studies learning necessarily includes assessment of skills and thinking with respect to social studies information, concepts, and issues. Our understanding, implicit or explicit, of skills and thinking and their relation to one another and to social studies knowledge shapes how we go about assessment and interpret its results. The purpose of this paper is to make understanding explicit by bringing relevant cognitive process research and theory to bear on questions of the nature and relationship of skills, thinking, social studies knowledge. In part one, I address the meaning of skills and the role of skills in thinking. In part two, I consider the question of generic versus specific skills, and in part three, I explore implications for assessment.

Skills and Thinking

By skills, I mean cognitive (i.e., mental, intellectual) operations or processes such as retrieving information from memory, identifying something as an example of a concept, noting similarities between two objects or accounts of a situation, recognizing inconsistencies in an argument, and applying an algorithm to answer a question. The skills of interest here are

cognitive as distinguished from social or physical skills such as introducing one's parents to a friend or standing on one's head.

Over the years, a number of cognitive skills have been identified as important to social studies learning (e.g., Carpenter, 1963; NCSS, 1981, 1984). The 1981-82 NAEP social studies objectives, for example, included demonstration of skills in acquiring information, organizing and applying information, making decisions and solving problems, and critically evaluating information. Some cognitive skills are considered applicable across subject areas while others are considered specific to social studies, a point to which I return in part two.

The role of skills in thinking is unresolved within and outside social studies education. The common and usually unexamined contemporary assumption is that thinking consists of a collection of cognitive skills, i.e., thinking skills. A skills conception of thinking is a relatively recent development, one which seems insufficient to foster thinking in social studies or other subjects. Instead, as I have argued elsewhere (Cornbleth, 1985), skills contribute to but do not constitute thinking. If, for example, critical thinking is conceived as raising and pursuing questions about the ideas one encounters, the skills that contribute to critical thinking will vary with the situation,

including the ideas encountered, the social context of the encounter, and the prior knowledge and values of the individual. Particular aspects of thinking are situation dependent and cannot be predetermined or specified out of context except in very general terms.

Even if thinking could be decontextualized, it probably could not be meaningfully divided into discrete components or skills (McPeck, 1981). Facets of thinking are overlapping and interacting such that any separation would be arbitrary and distorting. Even if thinking could be subdivided its restoration would not simply be a matter of addition or cumulation because of the importance of pattern or arrangement.

There are at least three additional problems with a skills definition of critical or other thinking. One is that, without being offered some conception of the nature of thinking, we cannot tell whether the skills might add up to thinking or something else or nothing at all. A second is that lists of skills and/or steps imply that thinking is and should be linear, which it rarely, if ever, is or could be. Instead, thinking tends to be recursive; as one question is explored, for example, others may be raised and pursued while the initial question is put "on hold" or abandoned altogether. A sequence of skills or steps is not logic-in-use but

a reconstructed logic (Kaplan, 1964) that misrepresents what occurs while one is actually thinking.

The third and more serious problem concerns the reductionist assumption. If a number of components or skills add up to thinking, the corollary assumption is that thinking can be cut into pieces and reassembled without damage. This reductionist assumption destroys the substance and spirit of thought. You cannot dissect a live frog.

If thinking consisted of a number of skills or a series of steps, one might expect considerable agreement as to the constituent skills or steps. However, there appears to be little or no such agreement. One might also expect that students who had mastered a given set of skills would demonstrate thinking. Ennis (1962), for example, has distinguished 12 aspects of critical thinking, which he defines as "the correct assessing of statements." If we accept his definition and list of critical thinking abilities, we might expect that the more abilities students have acquired, the more likely it is that they will correctly assess statements (or that they will assess statements more correctly). To my knowledge, however, there is no such evidence. Students who have mastered one or another skill have done just that. It does not necessarily follow that the skills will result in or be used in the service of critical thought. It

is also conceivable that preoccupation with skills might dull one's critical capacity.

Thinking cannot be reduced to a universally applicable formula of skills or steps to follow except by conceptual or empirical alchemy. The seeming rationality of specifying thinking skills and sequencing them in a logical or psychological order for instruction is appealing. But that rationality is illusory. Analytically distinguishable elements are interdependent in practice, and logical or psychological order bears little resemblance to the organization of practice.

Drawing on Aristotle, Wiggins (1978) makes a similar case with respect to "practical reasoning." According to Aristotle, "the openness, indefiniteness and unforeseeability of the subject matter of praxis" resists codification. Wiggins suggests that those who seek "a system of rules" hope "to spare themselves some of the agony of thinking and all of the torment of feeling and understanding that is actually involved in reasoned deliberation" (p. 150). From a psychological perspective, Shulman and Carey (1984) have also argued against reductionism and the assumption of universality with respect to reasoning and rationality.

Although formulaic approaches to reasoning and thinking are increasingly eschewed in both philosophical and psychological

work, they retain a firm hold in education. A brief history might help to explain the emergence and holding power of the skills conception of thinking.

The psychological orientation of 20th century U.S. education, together with the social efficiency and scientific management movements earlier in this century, and the anti-intellectualism that has characterized U.S. history and society for more than two centuries seem to have been major factors in the transformation of skill in thinking to thinking skills.

As the turn of the century, the language was one of skilled performance where skill referred to proficiency at a task, usually a physical activity that was seen as practical or useful, e.g., the skilled worker. By the 1920s, there is reference to skill subjects such as reading, arithmetic, and writing, which were earlier called "common branches" and later became "basic skills." It is not until the 1950s that intellectual activity and thought are referred to as skills, i.e., thinking skills. The 1940s appear to have been a decade of transition and the 1950s one of consolidation such that by the 1960s thinking skills were largely taken-for-granted.

Since the 1920s, social efficiency by means of "scientific management" has been a watchword of U.S. schooling (Callahan,

1962). Key features of the scientific management that is to provide efficiency have been measurement and task analysis. Earlier in this century, measurement took the form of individual aptitude and achievement tests, teacher rating scales, and school surveys, resulting in what Rugg (1926) decried as "an orgy of tabulation." Measurement was to enable determination of efficiency, and later, accountability such that less efficient practices could be identified and eliminated in favor of more efficient ones.

Psychometric technology demanded what became known as task analysis, that is, the decomposition of complex acts into presumably discrete elements amenable to quantification (cf. Frederiksen, 1984). Task analysis also contributed to scientific management by facilitating the prespecification and control of teaching and learning that was to enhance efficiency. It was not only assumed that tasks such as reading and thinking and teaching could be meaningfully decomposed, but also that the identified elements could be best taught and learned one at a time and then assembled to create the desired whole.

Thus, the demands of curriculum, teaching, and particularly evaluation for specification of what was to be taught, learned, and measured strongly influenced the redefinition of skill in

thinking to thinking skills. It is more difficult to observe and measure thinking or its products, for example, than one's response to a multiple-choice test item that purports to measure a component element or skill such as determining whether a conclusion logically follows from given premises (see, e.g., Dressel & Mayhew, 1954; Smith & Tyler, 1942). Reporting on the Cooperative Study of Evaluation in General Education, Dressel and Mayhew noted that available definitions of critical thinking

> all proved too abstract for evaluation or teaching purposes. The only recourse was to define critical thinking as the sum of certain rather specific behaviors which could be described and which could be inferred from student acts (1954, p. 37)

By the 1950s, "the only recourse" was to cast thinking as skills in order to satisfy psychometric demands.

Decomposition of thought into skills occurred in a political context of demands for accountability and efficiency, supported by psychologists and professional measurement specialists who promised the desired data and outcomes. This context seems to have been forgotten while thinking as skills has come to be taken-for-granted as the correct interpretation or the natural state of affairs. The decontextualization of the transformation and the

subsequent recontextualization of thinking as skills tends to obscure the political and professional interests that contributed to and continue to benefit from the transformation.

In addition to the psychologizing of education evident in the measurement and task analysis efforts associated with social efficiency and scientific management, the pervasive anti-intellectualism of American society contributed to the redefinition of thinking as skills. While Americans traditionally have been anti-intellectual, being skillful has been an integral part of American traditions and values (Hofstadter, 1963). Skill is useful and practical and therefore highly valued in the American context. Intelligence and thought have gained acceptance in this milieu in part by transformation to a collection of skills. Making the intellectual technical has made it acceptable. Thinking as skills is manageable as well as compatible with prevailing values. The skills language implies the utility of thinking. Not only are skills socially useful, but they can be specified in ways that enable their sequential arrangement for teaching and learning and their measurement for purposes of efficiency. A psychological construct, skills, thus became a pedagogical imperative. Taking the skills construct literally, as if thinking skills were "real," reified an abstraction and

contributed to the creation of a myth with considerable holding power.

The myth of thinking skills entered into the practice of education through the medium of professional discourse. Journals, books, and school materials can be seen to gradually adopt the skills language and assumptions. For example, in 1940, the National Council for the Social Studies (NCSS) published a bulletin entitled Selected Items for the Testing of Study Skills. In 1957, a third edition was published as Selected Items for the Testing of Study Skills and Critical Thinking (Morse & McCune, 1957). In their preface, the authors noted increased attention to the teaching and testing of critical thinking since the American Council on Education's Cooperative Study of Evaluation in General Education, 1950-53 (Dressel & Mayhew, 1954) and the twenty-fourth NCSS yearbook, Skills in Social Studies (Carpenter, 1953). The language of the 1957 edition is mixed with respect to thinking and skills. One finds reference to the "skill of thinking critically and clearly," "critical skills," and "skills of critical-mindedness" (Morse & McCune, 1957, pp. 3, 8, 25). With the fifth edition, the language is unequivocally the language of critical thinking skills (Morse, McCune, Brown, & Cook, 1971). The multiple editions of this bulletin indicates its wide appeal and potential

impact on teaching and testing in social studies education. The changing language can be seen as reflecting changes in the larger education community and responding to compelling social mandates.

The point of critiquing a skills conception of thinking and sketching its historical emergence is not to denigrate skills, but to warn against mistaking skills for thinking and taking demonstration of particular skills as evidence of thinking. Skills and thinking are not synonymous and ought not to be treated as such for assessment or other purposes.

Generic versus Specific Skills for Thinking

Whether skills that contribute to thinking and thinking itself are generic (i.e., the same or similar across subject areas), specific to each subject area or domain, or a combination is another unresolved question within and outside social studies education. Here too, the common assumption -- that skills and thinking are generic -- runs counter to recent cognitive theory and research.

If thinking consists of a number of skills, the underlying assumption is that these skills are independent of the subject matter content to which they might be addressed. Thinking skills and strategies (patterned combinations of skills) are assumed to be knowledge-free or generic and transferable from one situation to another.

Increasing evidence, however, indicates that the development of thinking and associated skills is highly knowledge dependent. In other words, we cannot think very deeply or critically about ideas we encounter unless we know something about the area in question. With the possible exception of metacognition, skills and strategies that contribute to thinking also tend to be domain specific.

The conceptual argument for the domain specificity of thinking is well presented by McPeck (1981), drawing particularly on the work of Toulmin (1958). The "received view" of thinking as a collection of generic skills reflects a "tendency to reify the sort of items listed in B. S. Bloom's taxonomy" (McPeck, 1981, p. 55), the assumption being that there are generalized abilities transferable across knowledge domains. However, the evidence regarding transfer is mixed at best (e.g., Belmont & Butterfield, 1977). There is no "set of supervening skills" that can replace substantive knowledge of the field in question. (See Toulimin (1958) on the illogic of applying formal logic to practical reasoning, and McPeck (1981) on the inadequacy of informal and formal logic as a basis for critical thought.)

Consider, for example, the following aspects of critical thinking from Ennis' (1962) list: grasping the meaning of a

statement; judging whether a statement is specific enough; judging whether a statement is actually the application of a certain principle; judging whether the problem has been identified; judging whether a definition is adequate. How could one grasp the meaning of a statement and reasonably make such judgments about the statement without knowledge of its subject area content?

The knowledge in which thinking is embedded is more than empirical and conceptual. The various fields of knowledge have different logics or modes of reasoning. While not mutually exclusive, the standards of judgment for what counts as sound knowledge and argument differ from one subject area to another. What constitutes good reason and evidence for belief in history differs from that in economics, law, and chemistry. "Just as there are different kinds of knowledge, so there are different kinds of reasons, evidence, and modes of justifying them" (McPeck, 1981, 23). The knowledge that is crucial to thinking is procedural and normative as well as empirical and conceptual. Consequently, the separation of subject matter content and thinking process is arbitrary and misleading.

Because each area of knowledge has its own distinctive logic, the criteria or expectations for thinking vary from one to another. The legitimacy of these differences has been well

argued by Toulmin (1958). To impose standards of one field such as mathematics on another, say anthropology, is absurd.

> If we ask about the validity, necessity, rigour or impossibility of arguments or conclusions, we must ask these questions within the limits of a given field, and avoid, as it were, condemning an ape for not being a man or a pig for not being a porcupine. (p. 256)

Toulmin's additional argument that the natural sciences are distinguished "not by the types of objects with which they deal, but rather by the questions which arise about them" (1977, p. 149) seems equally appropos of the social sciences. There are also intra-field differences in questions raised and acceptable grounds for belief such as those between behavioral and cognitive psychology. The differences in questions raised and means of pursuit between and within fields point to a further distinction that cuts across subject matter or disciplinary boundaries in history and the social sciences. This is the paradigmatic distinction. A paradigm is a world view or framework of knowledge and belief through which we "see" and investigate the world. Scientific paradigms consist of working assumptions about the world and how it is to be studied, understood, and acted upon, i.e., interrelated concepts and values, questions, procedures, and actions.

Thinking, then, varies with the domain investigated and the paradigm adopted. To argue that thinking is neither absolute nor

universal is not to suggest that it is either either idiosyncratic or individual. Thinking is a social as well as a cognitive activity, shaped by the setting and the norms of the community in which it occurs. The complexity and pluralism of the knowledge underlying thinking renders generic thinking skills illogical and impotent.

The empirical evidence for the domain specificity of thinking and associated skills and strategies comes largely from recent studies of reasoning and problem solving in math, science, and social science. (Glaser (1983) and Voss (in press) provide excellent reviews.) The conclusion to be drawn from this research is that while general skills and strategies can be identified, they are relatively weak and useful only when one does not know much about the field or problem in question. Greeno (1980), for example, has critiqued his own earlier problem-solving process typology (1978) as inadequately accommodating knowledge factors. He indicates that there are probably classes of problems for which similar kinds of problem-solving processes are appropriate but no set of generic skills. Efforts to identify common patterns in children's reasoning across tasks, Siegler (1983) observes, have not been "notably successful." If such generic strategies exist, they are "extremely difficult to identify." Like Greeno,

Siegler concludes that similarities suggesting generic skills and strategies are more likely to be found when people lack specific knowledge. These "fall-back rules," however, are "weak methods" that are not especially helpful, e.g., generate and test, means-ends analysis, divide and conquer (see Newell (1980) for a summary of "weak methods" of problem solving). "Strong methods," in contrast, tend to be domain specific.

The available evidence indicates both that generic skills and strategies for thinking are weak methods at best and that efforts to teach them are unlikely to foster thinking in a particular domain. In contrast, teaching particular skills associated with thinking in a field does seem to be feasible if the skills are taught as an integral part of the subject matter (Glaser, 1983).

Implications for Assessment

Examination of the role of skills in thinking and the question of generic versus domain specific skills suggests several implications for assessment of skills and thinking in social studies.

One set of implications concerns assessing social studies relevant skills. If the goal is acquisition of particular skills, then assessment of the cued application of separate

skills (e.g., one skill per test item) is appropriate. If the goal is acquisition and appropriate use of particular skills, then each test item should require respondents to determine as well as apply the relevant skill. In either case, the skills selected for assessment should include strong (i.e., subject specific) as well as weak (i.e., generic) ones, and they should be assessed in the context of social studies subject matter. Testing separate skills, however, would not assess the extent to which respondents could select and appropriately integrate several relevant skills in a given situation.

A second set of implications concerns assessing thinking in social studies. If the goal is critical or other thinking, then assessment of thinking and not separate skills is needed. Thought requires something to think about, and since "good" thinking varies with the subject area, thinking should be assessed in subject matter context by the standards of that subject (e.g., history, economics, political science). Ideally, a preferred psychometric technology (e.g., multiple choice items) would not direct or limit goals, and assessment would emphasize skills in the context of thinking about social studies subject matter (e.g., by means of analysis of extended discourse).

Finally, the desire for comparability of assessment results over time and with other countries should not preclude changes in

NAEP-social studies that enable better measurement of important social studies skills and thinking objectives. Some previous items can be maintained for comparative purposes, and new ones can be introduced to better assess thinking in social studies.

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